REMARKS

Claims 8 and 30–37 were pending in the Application prior to the outstanding Office Action. Claims 8 and 30 – 37 were rejected under 35 U.S.C. 103(a) over U.S. Patent 6,185,474 ("*Nakamura*") in view of U.S. Patent 6,256,330 ("*Soraoka*"), and under 35 U.S.C. 103(a) over *Nakamura* in view of U.S. Patent 6,039,316 ("*Jackson*").

I. RESPONSE REJECTIONS UNDER 35 U.S.C. §112

In paragraph 2 of the Office Action, the Examiner rejected claim 33 under 35 U.S.C. §112. Applicant has amended claim 33 to clarify the operation of the "director." Applicant respectfully points out to the Examiner that the term "director" is defined on page 12 of the specification and is shown in several Figures (*e.g.*, Fig. 33).

II. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §103(a)

In paragraph 5 of the Office Action, the Examiner rejected claims 8 and 30 – 37 under 35 U.S.C. 103(a) over U.S. Patent 6,185,474 ("*Nakamura*") in view of U.S. Patent 6,256,330 ("*Soraoka*"). In paragraph 6 of the Office Action, the Examiner rejected claims 8 and 30 – 37 under 35 U.S.C. 103(a) over *Nakamura* in view of U.S. Patent 6,039,316 ("*Jackson*").

Nakamura in view of *Soroaka*

A. Independent Claim 8 is Patentable Over Nakamura In View of Soraoka

Independent Claim 8 recites:

> "a first control thread configured to control and monitor operations of the first track zone;
>
> a second control thread configured to control and monitor operations of the second track zone;
>
> wherein said first control thread communicates with said second control thread so that said first control thread and second control thread cooperatively accomplish transferring the carrier from the first track zone to the second track zone."

Nakamura is basically a file sharing network. The host computer 30 does nothing more than manage the file sharing between exposure control units 10, 20. *Nakamura* does not teach or suggest that the host computer 30 can coordinate the operation of the control units 10, 20.

Fig. 1 of *Nakamura* illustrates two exposure control units 10, 20 that are each monitored and managed by a host computer 30 through a network 40. Each control unit 10, 20 includes, among other things, a local communications control program (11, 21), local exposure work information management program (13, 23), and associated storage (14, 24). The exposure work information management program 13 "checks for the presence or absence of the job necessary for the exposure work and manages input/output into and from the storage 14." Col. 5, lines 41-44. The host computer 30 includes an exposure information management program 33, which has the same function as the program 13. Col. 53-58.

Figs. 2-3 of *Nakamura* illustrate the operation of the file sharing network, while Col. 5, line 65 through Col. 8, line 35 of *Nakamura* describe the steps performed by the system. In *Nakamura*, the storage 14 of control unit 10 includes job A and job B, while the storage 24 of control unit 20 includes job C. *See* Col. 6, lines 1-7. The host computer 30 provides instructions to control unit 10 to carry out job C. Upon receiving these instructions, the exposure work management program 13 of the control unit 10 checks for the presence or absence of job C in storage 14 (Col. 6, lines 140-18), cannot locate job C in storage 14 (because storage 14 contains only job A and job B) and asks the host computer 30 if it has job C stored in its storage 34 (Cool. 6, lines 30-35). The storage 34 in the host computer 30 includes only job D and job E.

When the control unit 10 receives the message from the host computer 30 that it does not have job C, the control unit 10 then asks control unit 20 whether job C is stored in its storage 24. Col. 6, lines 58-67. The control unit 20 checks its storage 24, confirms that job C is stored in storage 24, and sends a positive response to the control unit 10. Col. 7, lines 1-8. Upon receipt of the positive message, the control unit 10 notifies the host computer that job C has been found and job C is transferred to the memory 12a of the control unit 10 so that job C may be carried out by the control unit 10. Col. 7, lines 38-42. *Nakamura* teaches that "by acquiring the corresponding exposure work information from the other unit, it is possible to start the exposure work if any one of the units of the production system has the exposure work information." Col. 8, lines 31-35.

In contrast to *Nakamura*, the present invention involves multiple zones "independently controlled" by different threads that cooperatively accomplish "transferring a carrier" by communicating among themselves. In a preferred embodiment, these separate threads are residing on the same control logic computer and they each control and monitor different electromechanical devices. This is a different control architecture than that disclosed in *Nakamura* and is not taught or suggested therein. It would not be obvious to one of ordinary skill to create a cooperative control architecture from *Nakamura*.

The cooperation of zone threads is an important aspect of the present invention. See for example page 27, lines 28-33, page 50, lines 17-29, page 51, lines 12-17, page 54, lines 18-24, page 55, lines 8-13, 29-33 and Figure 16. "The zone threads 512 perform the speed control methods cooperatively, using messages exchanged by zones threads 512 in the same neighborhood indicating the movement status of the material being moved." p. 54, lines 29-33.

In the preferred embodiment of the present invention, multiple zone threads run on a single control logic computer. Thus, each thread is responsible for controlling a different electromechanical device. Two neighboring zone threads cooperate to coordinate movement of material between them. Neither zone thread is in control of the other zone thread, the cooperatively accomplish a common goal. An advantage of the present invention is that the transport controller does not have to be involved in lower level communication involving movement of material between zones, and within a control logic computer there is no centralized control but a thread responsible for each zone.

Thus, *Nakamura* does not disclose or suggest a control structure in which separate devices or "zones" are "independently controlled" by different threads or control programs running on the same or separate platforms in order to "cooperatively accomplish" a goal. In particular, the semiconductor exposure units 10 do not communicate among themselves to accomplish a goal, and host computer 30 does not employ multiple programs or threads, each of which is responsible for a different exposure unit and each of which communicate and cooperate among themselves.

There is no disclosure or suggestion in Nakamura of multiple programs each controlling a separate mechanical device that communicate and cooperate to accomplish a common goal. The work information program 13 and the equipment control program 12 have different functions

and do not need to cooperate. After a semiconductor exposure unit 10 has been instructed to carry out work by host computer 30, exposure work information program 13 locates and loads the work information data file, and subsequently equipment control program 12 performs the work. Col. 6, lines 7-29. The control structure of *Nakamura* is strictly hierarchical, there is no cooperation between programs to accomplish a common goal.

Soroaka does not tech or suggest the elements missing from *Nakamura*. Thus, the computer mechanism recited in claim 8 is not obvious over *Nakamura* in view of *Soroaka*.

Soroaka teaches a semiconductor manufacturing line. The only disclosure in *Soroaka* of any computer system is on Col. 9, lines 22-29. In particular, *Soroaka* discloses a host computer, that like *Nakamura*, is an information management system, and not a computer system that could coordinate the operation of the manufacturing line. *Soroaka* teaches that the dummy wafer test results may be stored in "a host computer of the semiconductor manufacturing line controller for managing all of the vacuum processing apparatuses." Col. 9, lines 23-26. Because an information management system is not equivalent to a "computer mechanism" that accomplishes "transferring the carrier from the first track zone to the second track zone," claim 8 is not obvious over *Nakamura* in view of *Sokora*.

B. Dependent Claims 30–37 are Patentable over *Nakamura* In View of *Soraoka*.

Dependent claims 30 – 37 depend directly or indirectly from independent claim 8. For at least the reasons stated above with respect to Claim 8, dependent claims 30–37 are patentable over *Nakamura* in view of *Soraoka*.

Nakamura* in view of *Jackson

A. Independent Claim 8 is Patentable Over *Nakamura* In View of *Jackson*

Independent Claim 8 recites:

"a first control thread configured to control and monitor operations of the first track zone;

a second control thread configured to control and monitor operations of the second track zone;

wherein said first control thread communicates with said second control

thread so that said first control thread and second control thread cooperatively accomplish transferring the carrier from the first track zone to the second track zone."

For at least the reasons discussed above, the computer mechanism recited in claim 8 is not obvious in view of *Nakamura*. Furthermore, *Jackson* does not teach or suggest the elements missing in *Nakamura*.

Unlike the present invention, *Jackson* teaches a multi-hierarchical control system for controlling the transport of objects. The transport system in *Jackson* includes multiple sensors 203 and actuators 202 for controlling the movement of an object. Fig. 6 illustrates that a first level computational element 604 is coupled to one sensor 203 and one actuator 202. Col. 6, lines 31-33. Each first level computational element 604 is coupled to two or more second level computational elements 606. Col. 7, lines 10-13. *Jackson* discloses that one second level computational element 606, in combination with multiple first level computational elements 604, comprises a "zone of control." Col. 7, lines 60-64. Thus, *Jackson* does not teach or suggest a single "control thread configured to control and monitor operations of [a track zone]" as recited in claim 8 of the present invention. Instead, *Jackson* relies on receiving multiple threads of information to control and monitor a "track zone." For example, the second level computational element 608 relies on a thread from first level computational elements 620, 621 and 622 to control one "zone." Col. 7, lines 13-17; Fig. 6. Therefore, the computer mechanism recited in claim 8 is not obvious over *Nakamura* in view of *Jackson*.

B. Dependent Claims 30 – 37 are Patentable over *Nakamura* In View of *Jackson*.

Dependent claims 30 – 37 depend directly or indirectly from independent claim 8. For at least the reasons stated above with respect to Claim 8, dependent claims 30–37 are patentable over *Nakamura* in view of *Jackson*.

Additional Remarks

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application are allowable, and a Notice of Allowance is requested.

A Petition for Extension of Time under 37 CFR 1.136(a) has been enclosed with this Response. An appropriate fee under 37 CFR 1.17(a)(3) has also been enclosed with this Response to include today, February 14, 2007.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-3548 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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